

A NEW GENUS AND SPECIES OF TRICHIINI FROM MEXICO (COLEOPTERA: MELOLONTHIDAE)

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Abstract.—The adult and larva of *Iridisoma acahuizotlensis* NEW GENUS, NEW SPECIES from the State of Guerrero, Mexico, are described and illustrated. Relationships with *Paragnorimus*, *Dialithus* and *Giesbertiolus* are discussed. A modification of Howden's key to the North and Central American genera of Trichiini is included.

Resumen.—Se describen e ilustran el adulto y la larva de *Iridisoma acahuizotlensis* nov. gen., nov. sp. colectados en el estado de Guerrero, México. El único ejemplar conocido se obtuvo a partir de la cría de una larva de tercer estadio encontrada dentro de un tronco podrido. Se discuten sus relaciones con *Paragnorimus*, *Dialithus* y *Giesbertiolus*, comentando su distribución geográfica-ecológica. También se incluye una modificación a la clave para los géneros Norte y Centroamericanos de Trichiini.

Key Words.—Insecta, Coleoptera, Melolonthidae, *Iridisoma acahuizotlensis*

The North and Central American Trichiini are represented by 37 species included in eight genera (Howden 1968, 1970, 1971, 1972, 1988). All these taxa are apparently related to Old World genera, and the distribution of most of their species is relictual. The relationships between the American genera are vague, and at present they appear as distant taxa (Howden 1968). Only the larva of eight species of American Trichiini are known; these are in *Trigonopeltastes*, *Gnorimella* and *Trichiotinus* (Ritcher 1966, Morón 1983).

During summer, 1986, one cetoniid-like larva was collected from a rotten log in a disturbed subdeciduous tropical forest near Acahuizotla, Guerrero, Mexico. The larva was reared in the laboratory for seven months, emerging as a perfect adult male that showed characters that permitted easy separation from all other known genera of American Trichiini. This paper describes the new genus and species, based on the adult male, and the third instar larva, based upon its cast skin.

IRIDISOMA DELGADO-CASTILLO & MORÓN, NEW GENUS

Type Species.—*Iridisoma acahuizotlensis* Delgado-Castillo & Morón, NEW SPECIES.

Description.—Body oval-elongate, with conspicuous dorsal and ventral setae, without scales or cretaceous marks. Pronotum, scutellum, pygidium and venter iridescent green; elytra dull orange. Clypeus nearly as long as wide, with short erect setae, anterior border thickened, moderately emarginated. Mandibles membranous, maxillae with long, apical setae, mentum weakly widened, deeply emarginated. Frons and vertex with dense erect setae. Anteocular nocht present. Antennae 10-segmented. Pronotum longer than wide, semi-hexagonal, posterolateral borders parallel to and longer than convergent anterolateral margins; posterior angles well marked; dorsal surface with iridescent, rugose striae and numerous short, erected setae; margins well defined. Scutellum iridescent setose. Elytra longer than wide, with nonelevated interstriae and striae nearly obsolete; surface setose; lateral elytral declivity separated from elytral disc by a strong carina running from humeral to apical callus. Ventral

region with long setae, especially on metasternum. Middle coxae contiguous; tarsi longer than tibiae, tarsal claws entire, equal in length.

Male.—Pygidium wider than long, strongly convex apically, with abundant setae; fore tibiae unidentate; middle tibiae short, recurved inward, with inner apex projected as a hook-like structure and with an articulated spur.

Diagnosis.—*Iridisoma* is related with *Paragnorimus*, *Dialithus* and *Giesbertiolus*, but can be distinguished by the following combination of characters: pronotum, scutellum, pygidium and venter completely iridescent, unique pronotal sculpture and elytral carina. The shape of the pronotum and elytra give a distinct appearance to this trichiine.

Distribution.—Known only from the type locality.

Etymology.—Greek: “*iridos*,” a rainbow, “*soma*,” the body, in relation with the iridescent color of all of the body.

Discussion.—Because this genus is described only with the male characters, it is possible that many of the female structures may be different, especially the shape of the clypeus, the pronotal convexity, the shape of pygidium and abdomen, the tarsal length, and the structure of the fore and middle tibiae.

Key to the North and Central American Genera of Trichiini
Modified from Howden (1968)

- | | | |
|--------|--|------------------------------------|
| 1. | Anterior border of clypeus rounded, truncate or slightly emarginated.
Color variable but not iridescent | 2 |
| 1'. | Anterior border of clypeus moderate or strongly emarginated. Color at least partially iridescent | 7 |
| 2(1). | Pronotal disc without complete “V”-shaped or triangular impressions, uniformly convex or with slight longitudinal or transverse depressions | 3 |
| 2'. | Pronotal disc with complete “V”-shaped or triangular impressions, these marks usually cretaceous | <i>Trigonopeltastes</i> Burmeister |
| 3(2). | Pronotal disc with at least some fine, erect setae; in some cases with transverse cretaceous stripes or spots. Body ovate | 4 |
| 3'. | Pronotal disc without setae or impressions, slightly and uniformly convex. Body elongate | <i>Apeltastes</i> Howden |
| 4(3) | Elytral disc pubescent | 5 |
| 4'. | Elytral disc without setae | <i>Gnorimella</i> Casey |
| 5(4). | Elytra dull, without shiny elevations | 6 |
| 5'. | Elytra shiny, sometimes with two shiny elevations . . . | <i>Trichiotinus</i> Casey |
| 6(5). | Pronotal disc with an incomplete cretaceous “V”-shaped or middle transverse line | <i>Peltotrichius</i> Howden |
| 6'. | Pronotal disc without cretaceous lines or dots | <i>Paragnorimus</i> Becker |
| 7(1'). | Dorsal surface glabrous or with sparse setae. Pronotum, pygidium and venter partially iridescent; elytra with iridescent spots. Pronotum with simple punctures and lines or with longitudinal sulci. Elytra convex, with lateral declivity sparsely marked | 8 |
| 7' | Dorsal surface densely setose. Pronotum, pygidium and venter completely iridescent, elytra dull. Pronotum with dense, transversely, rugose striae. Elytra with a strong carinae between the calla | <i>Iridisoma</i> NEW GENUS |

- 8(7). Clypeus longer than wide, bilobed. Pronotum with three central, longitudinal sulci. Fore tibiae of male unidentated *Dialithus* Parry
 8'. Clypeus slightly wider than long and moderately emarginated. Pronotum with a single middle longitudinal sulcus. Fore tibiae of male bidentated. *Giesbertiolus* Howden

Iridisoma acahuizotlensis Delgado-Castillo & Morón, NEW SPECIES
 (Figs. 1–14)

Type. — Holotype male, deposited in M.A. Morón collection (Xalapa, Mexico), final deposition in Instituto de Ecología, A.C. (Mexico); data: "MEXICO: Guerrero, Mochitlán, Acahuizotla, Cañada de Río Escondido. Altitud 650 m. Bosque tropical mediano subperennifolio." "Ex larva colectada 1-IX-86 en albura de *Cedrela* sp. C.Deloya y L.Delgado, cols. Prepupa 7-III-87. Pupa 14-III-87. Adulto 3-IV-87."

Male. — Holotype (Fig. 1). Total length (from the apex of clypeus to the pygidium): 15.1 mm. Maximum elytral width: 6.4 mm. *Clypeus.* Nearly as long as wide (0.9:1.0), wide and strongly emarginated, but not bilobed; anterior border thickened, slightly elevated; lateral borders keeled from the antecular notch towards apical third; clypea dull orange, darkened in the emarginated area; regular or fine punctulate with short, sparse, semierect setae. *Frons.* Black, strongly rugose toward the apex, with long, erect, dense setae. *Antenna.* Club slightly shorter than the funicle. *Pronotum.* Slightly longer than wide (1.0:0.9), anterior angles scarcely marked, middle angles rounded, and posterior angles acute, directed ventrally. Margins black. Covered with dense, semierect setae. *Scutellum.* Semiovate, slightly concave, colored as pronotum, with some semierect setae. *Elytra.* Longer than wide (1.0:0.84); dull orange, lateral margins and sutura black; area contiguous to lateral margin darkened; elytral carina brilliant orange. Surface finely rugose (best seen with counterlight), with nearly obsolete striae, except sutural striae slightly elevated near posterior third; short, semierect setae best seen at base and center. *Venter.* Iridescent, more intense than on pronotum. Metasternum with long, dense, decumbent yellow setae and a central arrow-shaped mark on the flat semitriangular disc. *Abdomen.* Slightly concave. Sternites I–IV equal in length, sternite V as long as III+IV, with the posterior border broad, slightly emarginated. Anal plate as long as the sternite V, posterior border nearly straight. Setae on the sternites long and decumbent. *Pygidium.* Wider than long (1.0:0.72), same color as sternites, with only narrow mesial stripe and apex dark red; rugose, with long, abundant, semierect setae distributed evenly. *Legs.* Coxae iridescent; femora brilliant orange with iridescent green shine on the anterior face and near the coxae. Fore tibiae spur shorter than basal tarsomere. Fore tibiae orange ventrally and dorsally, dorsolateral face black. Fore tarsi black, almost one-third longer than fore tibiae; tarsomeres I–IV short tuft of ventral setae, denser towards the tibiae. Middle tibiae dark orange, bent at apical one-half; mesotibial spur shorter than basal tarsomere (Fig. 2). Middle tarsi 2.0× longer than middle tibiae. Hind tibiae black, long and fine, scarcely thickened towards the apex, with a short, dorsal, transverse carina and two elongated, apical spurs. Hind tarsi nearly twice as long as tibiae. Middle and hind tarsi with long, stout setae on the ventral and apical surfaces (except the last tarsomere). All the tarsal claws nearly as long as tarsus V. *Genitalia.* Basal piece and tectum strongly convex; paramera directed downward in the basal part, but abruptly bent distally, with two long and fine processes widened apically; the apices are rounded and mesially directed (Figs. 3–4).

Third Instar Larva. — (Figs. 5–14). *Head.* Maximum width of head capsule: 3.5 mm. Surface of cranium slightly rugose, light yellow. Frons laterally bearing one minute posterior seta, one minute exterior seta, and two minute anterior setae; remaining cranial surface glabrous, except one dorsal epicraneal seta and two paraocellar setae laterally. Clypeus laterally bearing two long anterior setae and one minute exterior seta. Labrum semiovate, with two central setae and two lateral setae. Ocelli present (Fig. 5). Epipharynx (Fig. 6), without clithra and zygum, with only nine erected setae on haptomera; right chaetoparia with 38–40 spine-like setae and few minute fine setae; left chaetoparia with 20–22 fine setae; dextiotorma, laeotorma and sense cone well developed, acanthoparia with four or five curved setae. Scissorial area of left mandible with three teeth, well separated by two notches; molar area with one lobe, rounded acia, very prominent, acute ventral process, dense brüstia (Fig. 7). Scissorial area of right mandible with two teeth; molar area with three acute lobes, ventral process

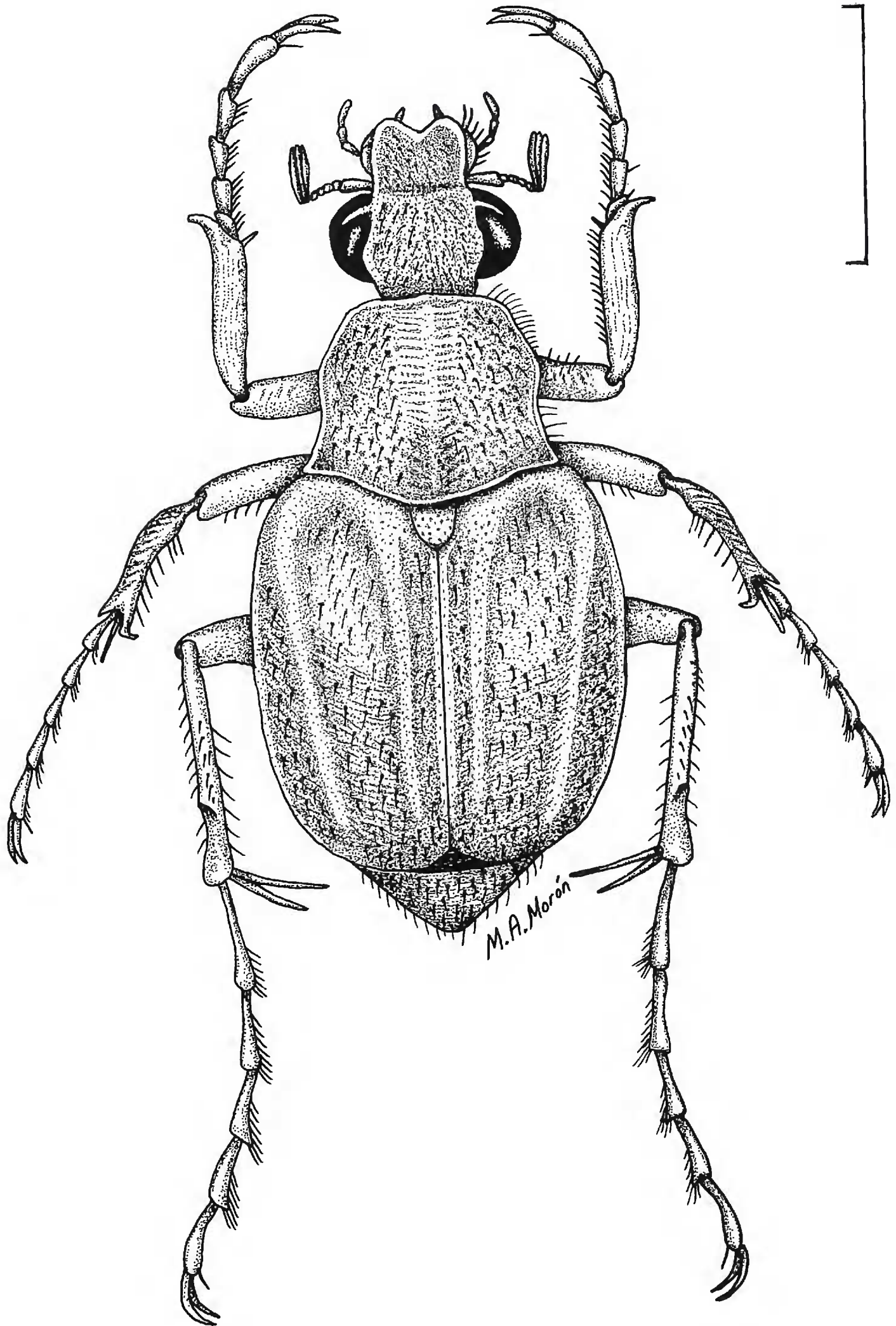
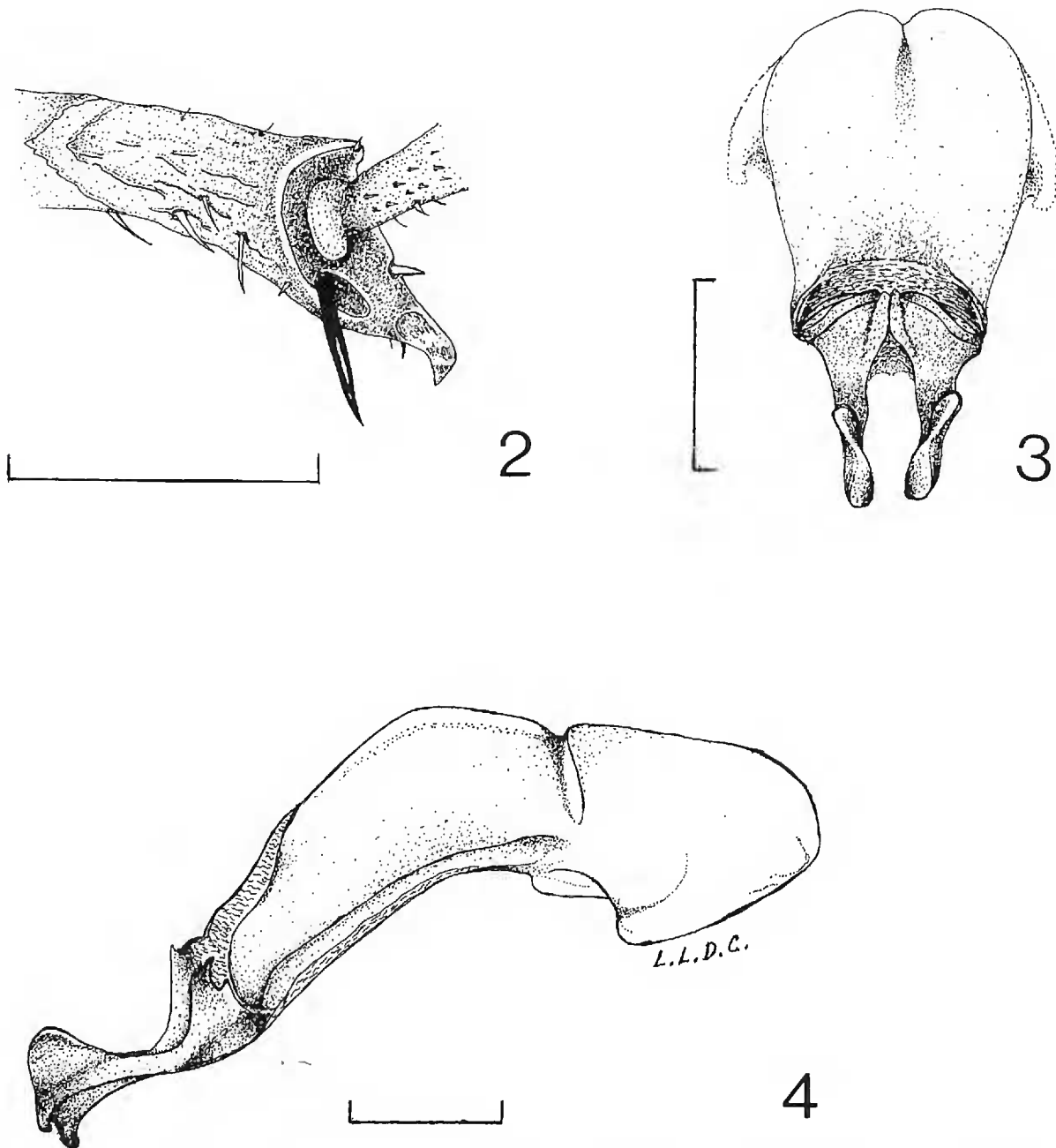


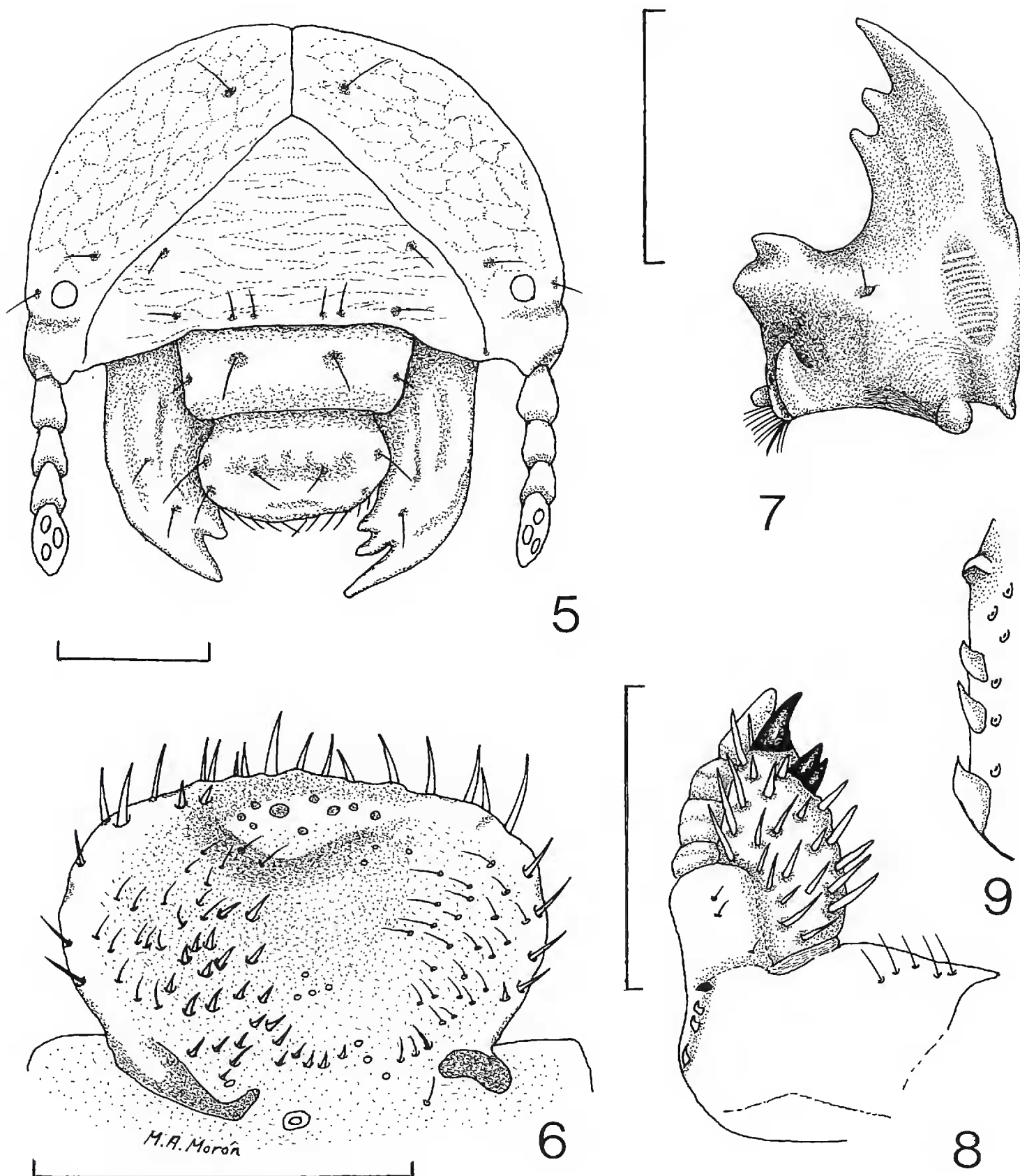
Figure 1. Dorsal view of the holotype of *Iridisoma acahuizotlensis* NEW GENUS, NEW SPECIES. Scale line 5 mm.



Figures 2–4. *Iridisoma acahuizotlensis*. Figure 2. Distolateral view of the apex of left middle tibia. Figure 3. Distal view of the male genital capsule. Figure 4. Lateral view of the male genital capsule. Scale lines are 1 mm.

less acute and prominent pointed calx and short brustia. Stridulatory area of each mandible formed by 13 fine striae. Galea with sharply pointed conical uncus; lacinia with two fused large conical unci; maxillary stridulatory area with only three sharp, anteriorly directed, recurved or angulated teeth, and a prominent distal, rounded process (Figs. 8–9). Labium short, with scarce small setae; hypopharyngeal sclerome strongly developed, prominent and heavily sclerotized (Fig. 10). Dorsal surface of last antennomere with three sensory spots (Fig. 11). *Thorax*. Thoracic spiracles 0.45 mm long and 0.30 mm wide. Respiratory plate with a maximum of 18–20 irregular elongate “holes” along any diameter, but not in definite rows. Arms of respiratory plate nearly contiguous, separated by a distance much less than the dorsoventral diameter of the bulla. Prothoracic sclerome light yellow. Dorsal and lateral setae long, regularly distributed. *Abdomen*. Dorsa of abdominal segments covered with numerous fine, long setae, regularly distributed. Spiracles I–VIII similar in size, 0.40 mm long and 0.30 mm wide. Distance between the two lobes of the respiratory plate much less than the dorsoventral diameter of the bulla (Fig. 12). “Holes” of the plate with irregular, elongate shape, similar to those on thorax (Fig. 13). Upper anal lip with a great number of short and long mixed setae. Septula and palidia absent. Lower anal lip with numerous long scattered setae. *Legs*. Claws falcate, sharp pointed, each bearing two proximal setae (Fig. 14). *Body length* approximately 23 mm.

Diagnosis.—The species presents many unusual characters and is remotely related to other Central American species. One diagnostic feature is the male’s genitalia capsule, with the parameres long, narrow, strongly curved and widened

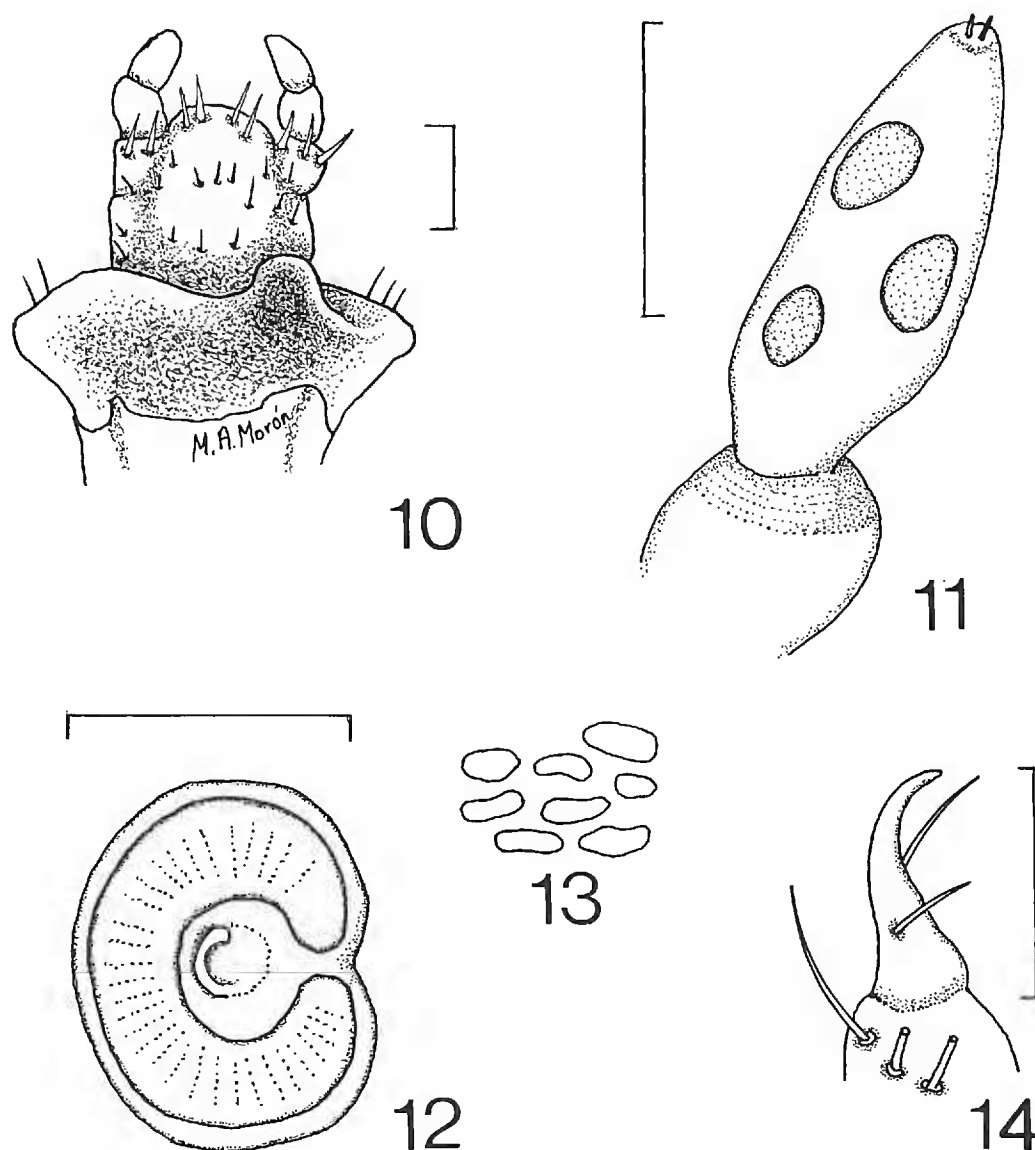


Figures 5–9. *Iridisoma acahuizotlensis* third-instar larva. Figure 5. Frontal view of head. Figure 6. Epipharynx. Figure 7. Inner view of left mandible. Figure 8. Inner view of right maxilla. Figure 9. Detail of right maxillary stridulatory area. Scale lines are 1 mm.

apically, not short, wide, straight or slightly curved and narrowed apically as in *Giesbertiolus* and *Dialithus*.

Etymology. — From the Mexican (Nahuatl) word “*Acahuizotlan*,” translated as “site of spiny reed grass” or “southern site of reed grass,” with the Latin suffix “*ensis*,” belonging to Acahuizotla.

Discussion. — The existence of this species in the Sierra Madre del Sur reinforces the relictual pattern of the montane southern Pacific distribution of these genera of Trichiini. We expect many other surprises in this poorly collected area, es-



Figures 10–14. *Iridisoma acahuizotlensis* third-instar larva. Figure 10. Inner view of hypopharynx. Figure 11. Dorsal view of last antennal article. Figure 12. Third abdominal spiracle. Figure 13. Detail of “holes” in the respiratory plate. Figure 14. Right hind tarsal claw, external view. Scale lines are 0.3 mm.

pecially in small humid, tropical or subtropical canyons, which support remnants of tropical subdeciduous forests. It is interesting that during three years of collecting, we only obtained the type specimen of *Iridisoma*; during that period, only 11 specimens of *Trigonopeltastes discrepans* Howden, *T. s. sallaei* Bates, *T. arquimedes* Schaum, *T. frontalis* Bates and *Apeltastes elongata* Howden were collected, always associated with the lower parts of the vegetation. Perhaps adults of *Iridisoma* are associated with the canopy of the subdeciduous tropical forest, represented in that locality, with trees 18 m high. The larval description is based on a single cast skin of a third instar larva reared to the adult stage.

According with the key to the larvae of American Trichiinae proposed by Morón (1983), *Iridisoma* must be placed near *Inca*, with reference to the absence of clithra, the number of dorsal sensory spots of the antennae, and the haptomerum without mesal tooth-like process. Also it is interesting that *Iridisoma* appears more related to *Trichiotinus* than *Trigonopeltastes*, based upon the mandibular and maxillar structures. It is necessary to know the larval morphology of other Central American genera of Trichiinae to understand their precise relationships.

Material Examined.—Type, reared from third instar larva; data: MEXICO. GUERRERO: Cañada de Rio Escondido, Acahuizotla, Mochitlán, 650 m, 1 Sep 1986, C. Deloya and L. Delgado, ex *Cedrela* sp. (Meliaceae) rotten log.

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LITERATURE CITED

- Howden, H. F. 1968. A review of the Trichiinae of North and Central America (Coleoptera: Scarabaeidae). Mem. Entomol. Soc. Can., 54.
- Howden, H. F. 1970. The genus *Paragnorimus*, with descriptions of two new species (Coleoptera: Scarabaeidae). Can. Entomol., 102: 1385-1389.
- Howden, H. F. 1971. A second species of *Peltotrichiis* (Coleoptera: Scarabaeidae). Can. Entomol., 103: 104-106.
- Howden, H. F. 1972. New species of *Dialithus* Parry and a new synonym of *Pantodinus* Burmeister (Coleoptera: Scarabaeidae: Trichiinae). Can. Entomol., 104: 647-654.
- Howden, H. F. 1988. A new genus and four species of New World Trichiinae (Coleoptera: Scarabaeidae). Coleopt. Bull., 42: 241-250.
- Morón, M. A. 1983. Los estados inmaduros de *Inca clathrata sommeri* Westwood (Coleoptera, Melolonthidae, Trichiinae); con observaciones sobre el crecimiento alométrico del imago. Folia Entomol. Mex., 56: 31-51.
- Ritcher, P. O. 1966. White grubs and their allies. University of Oregon Press, Corvallis.

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